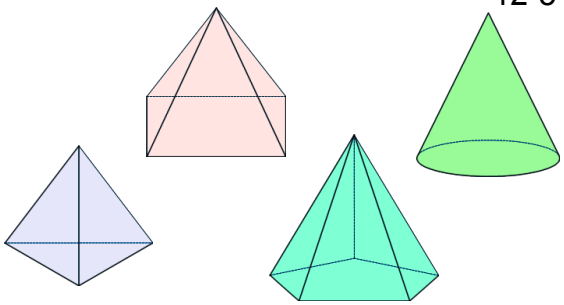
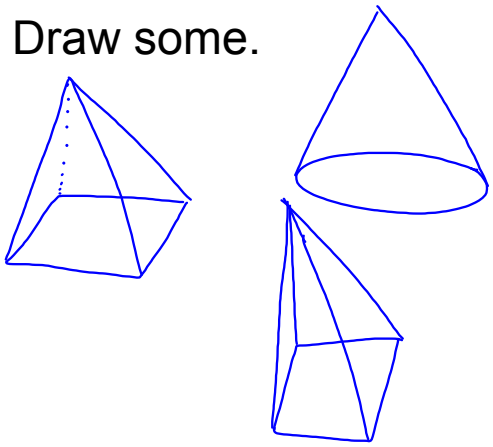
Pyramids and Cones

12-3
12-5



Draw some.



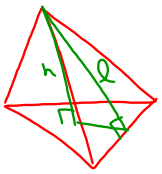
Pyramids
lateral faces--triangles

altitude-height

slant height ℓ
ht of lateral face

regular pyramid
- base regular polygon
- lateral edges congruent
- lateral faces congruent isosceles triangles
- altitude goes to the center of base

Sketchup_square Sketchup-triangle



$$LA = \frac{1}{2}pl$$

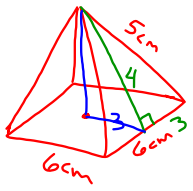
$$SA = LA + B$$

$$V = \frac{1}{3}Bh$$

p - perimeter of base
B - area of Base
ℓ - slant ht.

Square pyramid

side is 6cm
lateral edge is 5cm

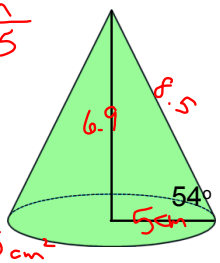


p = 24cm
B = 36cm^2
LA = $\frac{1}{2}p\ell$ $\frac{1}{2}24 \cdot 4 = 48\text{cm}^2$
SA = $48 + 36 = 84\text{cm}^2$
V = $\frac{1}{3}Bh$
$\frac{1}{3}36 \cdot \sqrt{7}$
$12\sqrt{7}\ \text{cm}^3$

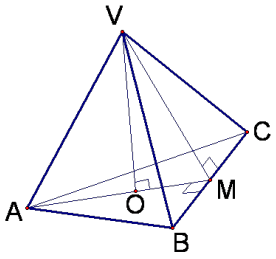
$h^2 + 3^2 = 4^2$
$h = \sqrt{7}$

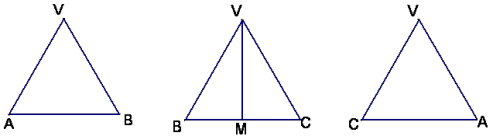
r = 5cm
$\ell = 8.5\text{cm}$
h = 6.9cm
C = 10π cm
B = $25\pi\ \text{cm}^2$
LA = $\frac{1}{2}10\pi \cdot 8.5 = 133.5\ \text{cm}^2$
SA = $133.5 + 25\pi \approx 212.1\ \text{cm}^2$
V = $\frac{1}{3}25\pi \cdot 6.9$
$180.6\ \text{cm}^3$

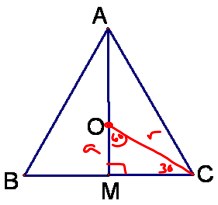
$\tan 54 = \frac{h}{5}$

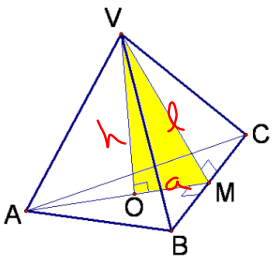


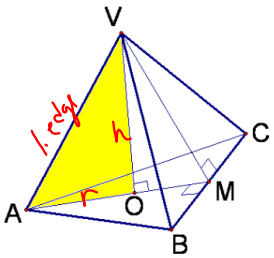
ws

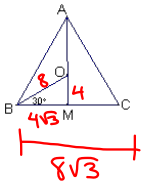






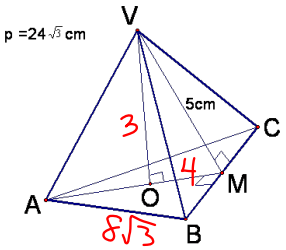






$h^2 + 4^2 = 5^2$

$B = 48\sqrt{3}\ cm^2$



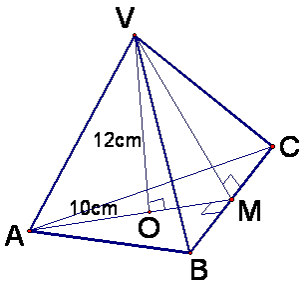
$LA = \frac{1}{2} 24\sqrt{3} \cdot 5$

$60\sqrt{3}\ cm^2$

$SA = 108\sqrt{3}\ cm^2$

$V = \frac{1}{3} 48\sqrt{3} \cdot 3$

$48\sqrt{3}\ cm^3$



Oblique pyramids and cones use the same volume formula!

HW
p814-815
#s 3, 4, 6, 7, 22
p832-833
#s3, 4, 6, 9, 14, 16, 21

Attachments

square_pyramid.skp

triangular pyramid slant height.skp